

Patent Application  
NC 84,637

Amendments to the Claims :

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-10 (canceled)

Claim 11 (new): A low temperature electrochemical method for removing specie X from compound MX, comprising the steps of

A. forming an electrolysis system comprising an MX cathode, an anode, and a non-aqueous ionic liquid electrolyte;

B. passing a current through said system at a voltage determined to remove X from MX, as determined from the voltage v. current plot of MX; and

C. isolating the reaction product resulting from removal of X from MX, as determined from the voltage v. current plot for MX.

Claim 12 (new): The method according to claim 11, where M is selected from the group consisting of a metal, a metal compound, or a semi-metal compound.

Claim 13 (new): The method according to claim 11, where M is selected from the group consisting of Ti, Si, Ge, Zr, Hf, Sm, U, Al, Mg, Nd, Mo, Cr, Li, La, Ce, Y, Sc, Be, V or Nb, or alloys thereof or mixtures thereof.

Claim 14 (new): The method of claim 11 wherein X is selected from the group consisting of O, C, N, S, P, As, Sb, or a halide.

Claim 15 (new): The method according to claim 11 wherein M is Ti(titanium) and X is O (oxygen).

Claim 16 (new): The method according to claim 11 wherein the

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electrolyte is a chloroaluminate system based on nitrogen heterocyclic cations or functional equivalent thereof.

Claim 17 (new): The method according to claim 11 wherein the electrolyte is selected from the group consisting of mono and dialkylimidazolium salts.

Claim 18 (new): The method according to claim 11 wherein the electrolyte is selected from the group consisting of mono and dialkylimidazolium salts.

Claim 19 (new): The method according to claim 11 wherein the electrolyte is 1-ethyl-3-methylimidazolium tetrafluoroborate.

Claim 20 (new): A low temperature electrochemical method for removing O from  $\text{TiO}_2$ , comprising the steps of:

A. forming an electrolysis system comprising a  $\text{TiO}_2$  cathode, an anode, and a non-aqueous ionic liquid electrolyte;

B. passing a current through said system at a voltage selected to remove O from said  $\text{TiO}_2$ ; and

C. isolating the reaction product resulting from the removal of O from  $\text{TiO}_2$ .